2 PURPOSE AND NEED

National Environmental Policy Act (NEPA) regulations (40 Code of Federal Regulations 1502.13) require that an environmental impact statement contain a statement of the purpose and need that briefly specifies the underlying purpose and need to which the agency is responding in proposing the alternatives, including the proposed action. The California Environmental Quality Act (CEQA) Guidelines, Section 15124(b), requires that the project description contain a clear statement of the project objectives, including the underlying purpose of the project. There are no requirements specifically addressing the description of a project's purpose and need in the Tahoe Regional Planning Agency Compact, Rules of Procedure, or Code of Ordinances.

This chapter describes the purpose and need and project objectives for the California Pacific Electric Company (CalPeco) 625 and 650 Electrical Line Upgrade Project in terms of its ability to address system inadequacies, reliability requirements, and federal and state standards.

2.1 BACKGROUND

2.1.1 REGULATORY REQUIREMENTS

State and federal regulations govern the provision of safe and reliable electric service by public utilities. California Public Utilities Commission regulations for system reliability are contained in California Public Utilities Code Section 399, which implements the California Legislature's Reliable Electric Service Investments Act (the Act). The Act states that each electrical corporation must operate its electric distribution grid in its service in a safe, reliable, efficient, and cost-effective manner [399.2(a)(1)] and that prudent investments continue to be made to protect the integrity of the electric distribution grid [399(c)(1)].

Federal requirements include the North American Electric Reliability Corporation (NERC) Reliability Standard TPL-002-0b. This NERC standard requires transmission systems have the capability to supply peak loads at adequate voltage levels without overloading the system components with any one component out of service. This is known as "single contingency reliability" or "N-1 contingency." The North Lake Tahoe Transmission System does not currently meet this federal standard.

2.1.2 EXISTING ELECTRIC SERVICE SYSTEM

On January 1, 2011, CalPeco purchased the Sierra Pacific Power Company's (Sierra Pacific's) California electric service territory. The physical boundaries of the service territory include the California portion of the Lake Tahoe Basin and extend north to Portola and Loyalton and south to Walker in Mono County. The service territory includes the North Lake Tahoe Transmission System, which is a loop that runs from the substations of Truckee to Squaw Valley to Tahoe City to Kings Beach and then back to Truckee. The following lines comprise this loop:

- one 60 kilovolt (kV) power line(the 609 Line) and one 120 kV power line (the 132 Line) from Truckee to Squaw Valley;
- one 60 kV power line from Tahoe City to Squaw Valley (the 629 Line);
- one 60 kV power line from Kings Beach to Tahoe City, (the 625 Line); and
- one 60 kV power line from Truckee to Kings Beach, (the 650 Line).

The North Lake Tahoe Transmission System is described in detail in Section 3.2, Existing Transmission System.

In addition to these transmission facilities, the Kings Beach Diesel Generation Station provides up to 12 mega volt-amperes (MVA) of additional system capacity during power outages and peak demand periods. (MVA is a measure of electrical power capacity that considers voltage and amperes, similar to a watt). However, the air quality permit for the diesel generation station limits operation to a total of 721 hours per year (taking into account all six generators), providing an operational limit on the degree to which the system can rely on diesel generation of power.

2.1.3 SYSTEM CAPACITY DEMANDS

The CalPeco customers served by the North Lake Tahoe Transmission System reside in unincorporated communities along the north shore of Lake Tahoe (i.e., from Tahoe City to Kings Beach), the Northstar community located north of the Lake Tahoe Basin along State Route 267, and the Squaw Valley community located north of the Lake Tahoe Basin along State Route 89. A portion of the system (i.e., the NV Energy-owned section of the 132 Line between North Truckee Substation and Martis Valley Substation) also serves Truckee Donner Public Utility District customers in the Town of Truckee area (i.e., at the Truckee Donner Public Utility District-owned Martis Valley Substation). A resident population of approximately 28,000 is served by the North Lake Tahoe Transmission System (US Census Bureau 2010), but the number of connections and potential demand is actually much higher because the resident population does not reflect that many of the electric customers are second home owners. Approximately half of the electricity load that CalPeco delivers to residential customers is to second homes or rentals (Sierra Pacific 2010: p. 2-3). Tourist and recreation-related facilities are also significant sources of electrical demand in the system area, including ski resorts, hotels, and condominiums.

Seasonal, economic, and demographic characteristics of the region lend themselves to wide swings in electrical demand. Demand in the North Lake Tahoe Transmission System is greatest during the winter months, and typically peaks in late December and January as a result of electric heating of homes, businesses, and tourist accommodations, and ski resort loads, including ski lifts and snow-making. The North Lake Tahoe Transmission System is designed to supply a maximum of 88 MVA under ideal conditions with no lines out of service. In the event of a line loss, the system is only capable of supplying approximately 80 percent of maximum capacity with the Kings Beach diesel generators running at full capacity.

Because of stresses on system facilities, peak electrical demand should not exceed the maximum capacity of the system. However, this condition recently occurred during peak periods resulting in line stress, potential damage to system facilities, risk of extended outages, and the potential need for load shedding (i.e., rolling blackouts). Specifically, a conductor (power line) has a thermal rating that reflects the maximum amount of power that it can safely transmit. When a conductor is forced to transmit in excess of its design capacity thermal rating, the conductor becomes overheated and damaged, leading to risk of electrical fires. At a minimum, such lines experience severe wear, which requires more frequent replacement.

Recently, favorable winter conditions and high levels of tourist activity in the months of December 2012 and January 2013 generated very high electrical demand. On December 30, 2012, in particular, peak demand was extremely high (which is not uncommon in favorable winter conditions) and the system was stressed beyond its design capacity. Accordingly, the power flowing through the lines put the lines in danger of exceeding their thermal rating. Diesel generators were required to provide supplemental power until passage of the peak. In the event of a line loss during this peak period, there would have likely been an extended outage.

2.1.4 SYSTEM RELIABILITY

The current North Lake Tahoe Transmission System is exposed to potential outages, most commonly caused by high winds that blow down power line poles, trees that fall onto the power lines, and snow load that causes line

failure. While electrical outages can be commonplace in areas with such hazards as extreme weather and dense forest (in which falling trees can damage lines), a highly reliable electrical system is one that has the ability to respond quickly to such hazards; that is, that adequate power is available and can be redirected from other portions of the system if any one segment is interrupted, and that lines are accessible for repair within a reasonable timeframe.

The reliability of the North Lake Tahoe Transmission System is not adequate and is in need of upgrade. Electricity within the system is provided to end users along a loop of power lines, most of which are 60 kV and, as described above, have recently operated at maximum capacity or excess of maximum capacity during peak periods. Because the lines run so close to capacity during such a period, the ability of the system to reliably redirect power if any one segment is interrupted (single contingency reliability) is limited. This is unacceptable from the standpoint of utility operations, and inadequate to meet federal and state requirements.

Under peak demand conditions, the system cannot currently withstand the loss of a single line segment without overloading other portions of the system, even with the Kings Beach diesel generators operating at full capacity. With the 625 Line rated at 60 kV, the system is unable to maintain the necessary capacity to power Kings Beach under peak demand conditions if the 650 Line is damaged. Likewise, the system is unable to maintain necessary capacity to Tahoe City under peak demand conditions if the 629 Line or 132 Line is damaged. In such circumstances, line losses associated with transmitting electricity around the remaining two legs in the circuit—the 609 and 625 Lines—result in significant voltage drops that can lead to brownouts or blackouts, and overloading that subjects the facilities to potential damage. Increasing the voltage of the North Lake Tahoe Transmission System to 120 kV would provide sufficient reliability and capacity in each critical line of the system to carry maximum system loads during single-contingency outages, so that if one line in the system were not functioning, power could be re-routed and delivered to customers using the other lines in the system. It would also preserve the limited allowable use of the Kings Beach Diesel Generation Station for potential multiple contingency failures (i.e., two or more parts of the system out of service simultaneously). Additional information on system reliability, operation, and capacity is presented in Chapter 3, Project Alternatives (Section 3.2.4).

As noted above, another aspect of system reliability is ready access to the lines to effect repairs in the event of an outage. Currently, the 625 Line experiences the most outages in the North Lake Tahoe Transmission System, with the primary causes being snow loading and downed trees. With respect to access, the 625 Line represents a severe challenge due to its remote location and lack of adequate roadways. Inspections and maintenance are often deferred to the winter months because trucks cannot reach much of the alignment and over-snow vehicles must be used for access. The lack of vehicle access also slows repair response time, resulting in longer outages than if the line were more accessible.

With any one component out of service, the system does not currently have the capability to supply peak loads at adequate voltage levels without overloading the system components. As described above, such an overloaded situation has the potential to result in severe damage to system facilities, even with the Kings Beach diesel generators operating at full capacity. This condition does not meet federal and state reliability requirements.

2.1.5 PROJECT PLANNING HISTORY

The need for the project has long been known. Sierra Pacific (prior owner of the electrical lines) had been studying and planning the 625 and 650 Electrical Line Upgrade Project for several years when the system was purchased by CalPeco. The original planning assumptions, project scope, and schedule established by Sierra Pacific were based on a 1996 study of the system needs. Before proceeding with the application, CalPeco believed it necessary to update the assumptions and recommendations of the 1996 study. One of the key factors that supported the need for updated data was the assumed load growth. The annual load growth projected in the Sierra Pacific study was 3 percent, which included 1 percent for normal population and

technology growth factors (i.e., increased electrical usage from high-end televisions, computers, and other devices) and an additional 2 percent for large, sporadic load increases caused by additions or expansions at ski resorts, commercial facilities, or other developments. As Sierra Pacific monitored growth, it adjusted the planned implementation of the 625 and 650 Electrical Line Upgrade Project on an annual basis in response to the fact that actual growth rates were less than the original 3 percent projection.

Although the level of load growth in the North Lake Tahoe area remains uncertain, CalPeco revised the Sierra Pacific estimate of 3 percent load growth downward to 1 percent to account for the recent economic downturn and the limited growth potential in the North Lake Tahoe Transmission System service area. The Lake Tahoe Basin portion of the service area is nearing a buildout condition; approximately 90 percent of privately-owned parcels in the Region have been developed (TRPA 2012). The amount of growth attributable to new development under the recently adopted Regional Plan Update would be limited by the small number of residential development rights and allocations available in the Region, and other growth management regulations that are in effect. For the portions of the project area outside the Lake Tahoe Basin, growth is planned and regulated by the general plans and zoning codes of Placer County, Nevada County, and the Town of Truckee (see also Chapter 5, Other NEPA, TRPA, and CEQA Mandated Sections).

2.2 PURPOSE AND NEED AND PROJECT OBJECTIVES

The proposed project would result in an essential increase in reliability of the North Lake Tahoe Transmission System through improved capacity, line accessibility, ability to re-route and redirect power so as to continue electrical service during a single-contingency outage, and minimizing the use of the Kings Beach Diesel Generation Station. Planned conversion of the North Lake Tahoe Transmission System from its current 60 kV loop with 88 MVA of capacity to a 120 kV loop with 114 MVA of capacity (without use of the Kings Beach Diesel Generation Station) is needed to provide single-contingency reliability in accordance with federal and state requirements.

2.2.1 PURPOSE AND NEED

The project is needed to provide reliable power to the North Lake Tahoe area, to meet federal and state requirements of electrical utilities, and ultimately, to support public health and safety. The project would provide the necessary power to support residential and commercial operations in the service area, reduce potential for extended outages, and reduce fire risk. The current North Lake Tahoe Electric Transmission System has a normal capacity of 88 MVA. The Kings Beach Diesel Generation Station is capable of providing 12 MVA of additional (or back-up) capacity to the North Lake Tahoe Transmission System during outages or high demand and is currently the only source of supplemental power to maintain the current maximum system loads in the event of an outage on any one of the four legs of the system (single-contingency reliability).

The current system, even with the Kings Beach Diesel generators operating at full capacity, is unable to function with an N-1 contingency as is required by the federal agencies that regulate power supply and the associated facilities. This means that during the coincident peak load, even with the diesel generators in operation, if one of the critical line segments is lost, CalPeco would need to implement a load shedding plan. Load shedding is a process that is used to reduce load in the event of an emergency by requiring customer load to be dropped. This is typically handled through an established plan that rolls the blackout to balance the load reduction. Once the peak demand has passed, the system is then restored to normal operation. Use of rolling blackouts as a method of routine operation is unacceptable; for purposes of public health and safety, load shedding must only be used in the event of an emergency. The reason for this is that such an approach does not meet acceptable health and safety response to services such as street lights and traffic control, hospital and medical care, home health care for individuals on medical machines or equipment, fire threat due to line overloading and other critical services

for which consistent, reliable power is essential. The proposed project would meet NERC regulations to provide N-1 contingency and address the existing system limitations.

Load shedding, or outages that result from downed lines wherein the utility is unable to reroute the power, affects a large sphere. These impacts such as loss of power to medical facilities, or home health care, or street and highway traffic control can result in severe impacts to the health and safety of individuals and businesses. The Tahoe system has historically experienced outages from the current system limitations.

The need for the proposed 625 and 650 Electrical Line Upgrade Project has been confirmed both from a transmission planning perspective and from known operational shortcomings. Federal and state electric reliability standards require CalPeco to ensure that the North Lake Tahoe Transmission System performs safely under normal and contingency conditions. The current system does not perform adequately under contingency conditions, and without the proposed upgrades, will continue to fall short of federal reliability requirements.

Although the North Lake Tahoe Transmission System does not incur peak load levels at all times, of course, it must be capable of meeting the maximum demand when it does occur. The system cannot currently provide single-contingency reliability during peak loads, even with use of the Kings Beach Diesel Generation Station, and is experiencing peak demands in excess of design capacity. The proposed project would ensure that the North Lake Tahoe Transmission System complies with federal and state electric reliability regulations and safety standards.

Addressing normal and projected loads, providing single-contingency reliability, and reducing dependence on the Kings Beach Diesel Generation Station would be achieved by upgrading the 625 and 650 Lines and associated facilities (e.g., substations) from 60 kV to 120 kV. Reducing the risk of wildfire hazard would be achieved by replacing existing wooden poles with the proposed steel poles, which are stronger and more resistant to wildfire (see Chapter 3, Project Alternatives, for more details on the proposed project elements). In addition, raising the elevation of the lines and widening the vegetation management corridor, both regulatory requirements when converting from the current 60 kV configuration to 120 kV, would reduce wildfire risk and risk of damage from encroaching vegetation. Increased access to the 625 Line for inspection, maintenance, and repairs would be achieved by re-routing the line to a less remote location with existing access roads, and creating new overland travel ways where needed. Improving truck access to the 625 Line for inspections and maintenance would also increase the lines' resilience to outages.

2.2.2 PROJECT OBJECTIVES

The CEQA objectives for the 625 and 650 Electrical Line Upgrade Project mirror those described above for the NEPA purpose and need, and those identified by Sierra Pacific in its 2010 California Public Utilities Commission application. In summary, the objectives of the project are to:

1. Provide normal capacity for current and projected loads.
2. Provide reliable capacity to assure adequate service to all customers during single-contingency outages.
3. Reduce dependence on the Kings Beach Diesel Generation Station.
4. Reduce the risk of fire hazards and outage durations associated with wooden poles and encroaching vegetation.
5. Provide more reliable access to the 625 Line for operation and maintenance activities.

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